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N¹,N²-dioleyl-N¹,N²-di-[2-hydroxy-3-(N-sperminecarboxamido)-aminopropyl]-
diaminoethane.

Substitute the paragraph beginning on page 64, line 5 with the following paragraph:

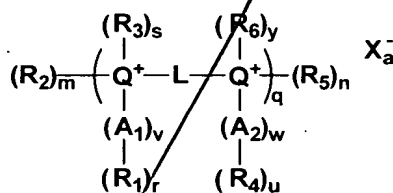
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The cholesterol analogs can be synthesized by using the scheme given below (Scheme 3). Jeffamine is alkylated with cholesteryl chloride to provide the dicholesteryl jeffamine analog (XII). Further alkylation with the epoxide phthalamide (XIII) and deblocking with hydrazine gives the compound of the invention (XIV).

In the Claims:

Please add the following claims 110-112:

110. (New) A compound having the formula:



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wherein

Q is selected from the group consisting of O and S;

L is C, CH, or $\{(CH_2)_i - Y - (CH_2)_j\}_k$, wherein Y is selected from the group consisting of an ether, a polyether, an amide, a polyamide, an ester, a sulfide, a urea, a thiourea, a guanidyl, a carbamoyl, a carbonate, a phosphate, a sulfate, a sulfoxide, an imine, a carbonyl,

and a secondary amino group and wherein Y is optionally substituted by $-X_1-L'-X_2-Z$ or $-Z$;

$R_1 - R_6$, independently of one another, are selected from the group consisting of H, $-(CH_2)_p-D-Z$, an alkyl, an alkenyl, an aryl, and alkyl ether, wherein any one of R_1-R_6 are optionally substituted by one or more of an alcohol, an aminoalcohol, an amine, an amide, an ether, a polyether, a polyamide, an ester, a mercaptan, an alkylthio, a urea, a thiourea, a guanidyl, or a carbamoyl group, and wherein at least one of R_1, R_3, R_4 and R_6 is a straight chain or branched, cyclic, alkyl, alkenyl, alkynyl or aryl group having from about 6 to about 64 carbon atoms; and R_1 and R_4 or R_3 and R_6 may optionally be covalently linked with each other, with Y or with L when L is C or CH to form a cyclic moiety;

Z is selected from the group consisting of amine, spermyl, carboxyspermyl, guanidyl, spermidinyl, putricinyl, diaminoalkyl, pyridyl, piperidinyl, pyrrolidinyl, polyamine, amino acid, peptide, and protein;

X_1 and X_2 , independently of one another, are selected from the group consisting of NH, O, S, alkylene, and arylene;

L' is selected from the group consisting of alkyl, alkenylene, alkynylene, arylene, alkylene ether, and polyether;

D is Q or a bond;

A_1 and A_2 , independently of one another, are selected from the group consisting of CH_2O , CH_2S , CH_2NH , $C(O)$, $C(NH)$, $C(S)$ and $(CH_2)_i$;

X is a physiologically acceptable anion;

m, n, r, s, u, v, w and y are 0 or 1, with the proviso that when both m and n are 0 at least one of r, s, u and y is other than 0;

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i, j, k, l, p and t are integers from 0 to about 100;

q is an integer from 1 to about 1000; and

a is the number of positive charge divided by the valence of the anion.

111. (New) The compound as claimed in claim 93, which is:

N¹,N⁴-dipalmitoyl-N¹,N⁴-di-[2-hydroxy-3-(N-aminopropyl)]-diaminobutane;

N¹,N⁴-distearyl-N¹,N⁴-di-[2-hydroxy-3-(N-aminopropyl)]-diaminobutane;

N¹,N⁴-dilauryl-N¹,N⁴-di-[2-hydroxy-3-(N-aminopropyl)]-diaminobutane;

N¹,N²-dimyristyl-N¹,N²-di-[2-hydroxy-3-(N-aminopropyl)]-diaminoethane;

N¹,N²-dipalmityl-N¹,N²-di-[2-hydroxy-3-(N-aminopropyl)]-diaminoethane;

N¹,N²-dipalmitoyl-N¹,N²-di-[2-hydroxy-3-(N-aminopropyl)]-diaminoethane;

N¹,N²-distearyl-N¹,N²-di-[2-hydroxy-3-(N-aminopropyl)]-diaminoethane;

N¹,N²-dilauryl-N¹,N²-di-[2-hydroxy-3-(N-aminopropyl)]-diaminoethane;

N¹,N⁸-dimyristyl-N¹,N⁸-di-[2-hydroxy-3-(N-aminopropyl)]-Jeffamine;

N¹,N⁸-dipalmityl-N¹,N⁸-di-[2-hydroxy-3-(N-aminopropyl)]-Jeffamine;

N¹,N⁸-dipalmitoyl-N¹,N⁸-di-[2-hydroxy-3-(N-aminopropyl)]-Jeffamine;

N¹,N⁸-distearyl-N¹,N⁸-di-[2-hydroxy-3-(N-aminopropyl)]-Jeffamine;

N¹,N⁸-dilauryl-N¹,N⁸-di-[2-hydroxy-3-(N-aminopropyl)]-Jeffamine;

N¹,N⁸-dioleoyl-N¹,N⁸-di-[2-hydroxy-3-(N-aminopropyl)]-Jeffamine;

N¹,N⁴-dimyristyl-N¹,N⁴-di-[2-hydroxy-3-(N-sperminecarboxamido)-aminopropyl]-

diaminobutane;

N¹,N⁴-dipalmityl-N¹,N⁴-di-[2-hydroxy-3-(N-sperminecarboxamido)-aminopropyl]-

diaminobutane;

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N¹,N⁴-dipalmitoyl-N¹,N⁴-di-[2-hydroxy-3-(N-sperminecarboxamido)-aminopropyl]-
diaminobutane;

N¹,N⁴-distearyl-N¹,N⁴-di-[2-hydroxy-3-(N-sperminecarboxamido)-aminopropyl]-
diaminobutane;

N¹,N⁴-dilauryl-N¹,N⁴-di-[2-hydroxy-3-(N-sperminecarboxamido)-aminopropyl]-
diaminobutane;

N¹,N⁸-dimyristyl-N¹,N⁸-di-[2-hydroxy-3-(N-sperminecarboxamido)-aminopropyl]-
Jeffamine;

N¹,N⁸-dipalmityl-N¹,N⁸-di-[2-hydroxy-3-(N-sperminecarboxamido)-aminopropyl]-
Jeffamine;

N¹,N⁸-dipalmitoyl-N¹,N⁸-di-[2-hydroxy-3-(N-sperminecarboxamido)-aminopropyl]-
Jeffamine;

N¹,N⁸-distearyl-N¹,N⁸-di-[2-hydroxy-3-(N-sperminecarboxamido)-aminopropyl]-
Jeffamine;

N¹,N⁸-dilauryl-N¹,N⁸-di-[2-hydroxy-3-(N-sperminecarboxamido)-aminopropyl]-
Jeffamine;

N¹,N⁸-dioleoyl-N¹,N⁸-di-[2-hydroxy-3-(N-sperminecarboxamido)-aminopropyl]-
Jeffamine;

N¹,N²-dimyristyl-N¹,N²-di-[2-hydroxy-3-(N-sperminecarboxamido)-aminopropyl]-
diaminoethane;

N¹,N²-dipalmityl-N¹,N²-di-[2-hydroxy-3-(N-sperminecarboxamido)-aminopropyl]-
diaminoethane;

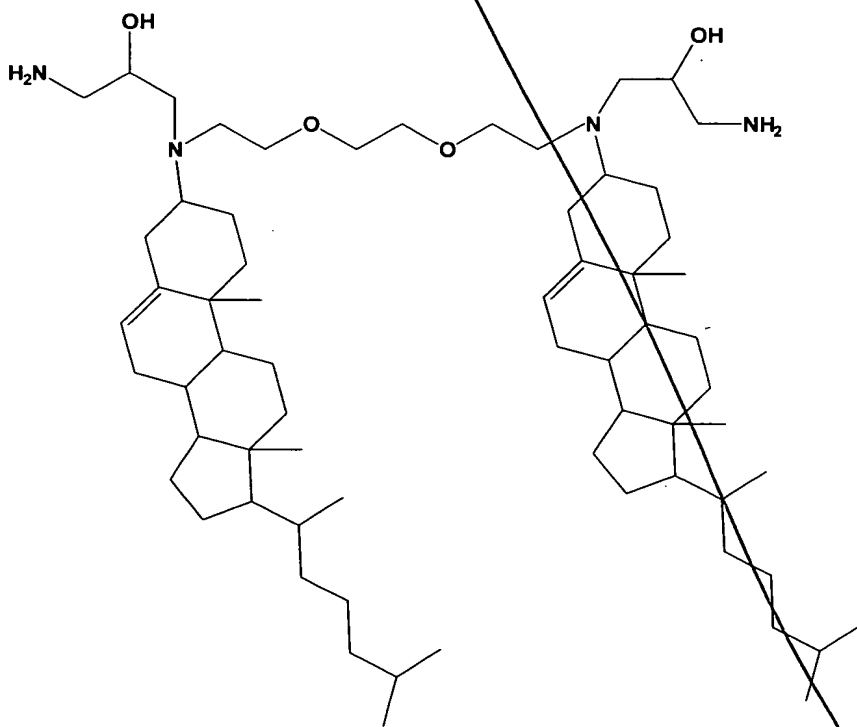
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~~N¹,N²-dipalmitoyl-N¹,N²-di-[2-hydroxy-3-(N-sperminecarboxamido)-aminopropyl]-
diaminoethane;~~

~~N¹,N²-distearyl-N¹,N²-di-[2-hydroxy-3-(N-sperminecarboxamido)-aminopropyl]-
diaminoethane; or~~

~~N¹,N²-dilauryl-N¹,N²-di-[2-hydroxy-3-(N-sperminecarboxamido)-aminopropyl]-
diaminoethane.~~

112. (New) The compound as claimed in claim 93, which is:



Please substitute the following claim 1 for the pending claim 1:

1. (Twice amended) The compound as claimed in claim 93,
wherein

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L is C, CH, (CH₂)_l, or {(CH₂)_i - Y - (CH₂)_j}_k, wherein Y is selected from the group consisting of CH₂, an ether, a polyether, an amide, a polyamide, an ester, a sulfide, a urea, a thiourea, a guanidyl, a carbamoyl, a carbonate, a phosphate, a sulfate, a sulfoxide, an imine, a carbonyl, and a secondary amino group and wherein Y is optionally substituted by -X₁-L'-X₂-Z or -Z;

R₁ - R₆, independently of one another, are selected from the group consisting of H, -(CH₂)_p-D-Z, an alkyl, an alkenyl, an alkynyl, an aryl, and alkyl ether, wherein any one of R₁-R₆ are optionally substituted by one or more of an alcohol, an aminoalcohol, an amine, an amide, an ether, a polyether, a polyamide, an ester, a mercaptan, an alkylthio, a urea, a thiourea, a guanidyl, or a carbamoyl group, and wherein at least one of R₁, R₃, R₄ and R₆ is a straight chain or branched, cyclic, alkyl, alkenyl, alkynyl or aryl group having from about 6 to about 64 carbon atoms; and R₁ and R₄ or R₃ and R₆ may optionally be covalently linked with each other, with Y or with L when L is C or CH to form a cyclic moiety;

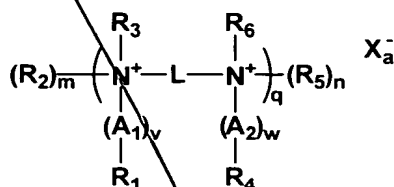
X₁ and X₂, independently of one another, are selected from the group consisting of NH, O, S, alkylene, and arylene;

L' is selected from the group consisting of alkyl, alkenylene, alkynylene, arylene, alkylene ether, and polyether; and

i, j, k, and l are integers from 0 to about 100.

Please substitute the following claim 5 for the pending claim 5:

5. (Twice amended) A compound having the formula:

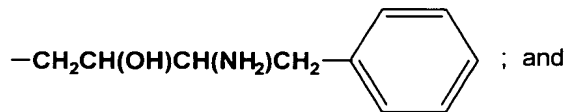
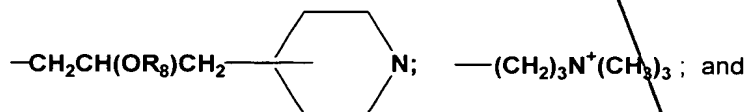
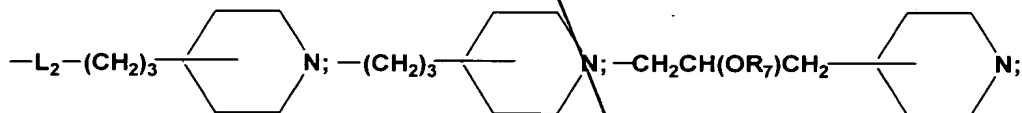
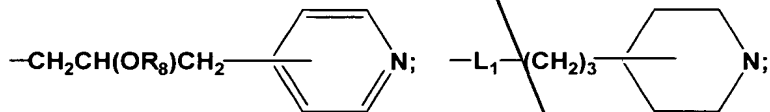
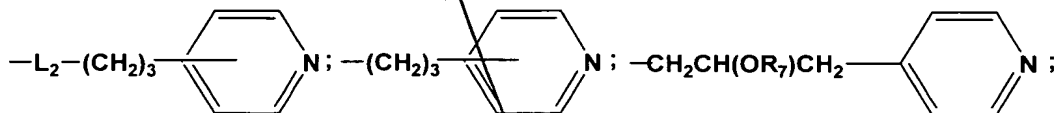
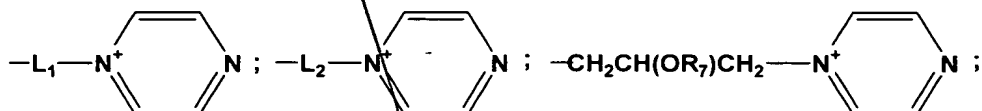
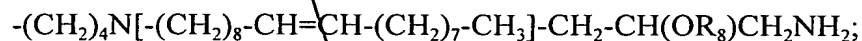
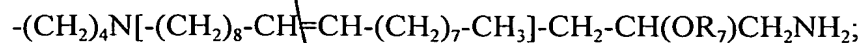
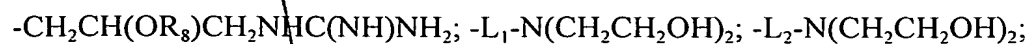
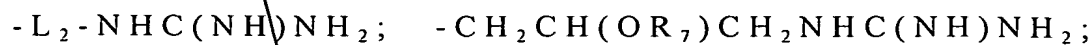


wherein

L is $(\text{CH}_2)_i$ or $\{(\text{CH}_2)_i\text{---Y---}(\text{CH}_2)_j\}_k$, wherein Y is selected from the group consisting of CH_2 , an ether, a polyether, an amide, a polyamide, an ester, a sulfide, a urea, a thiourea, a guanidyl, a carbamoyl, a carbonate, and a secondary amino group;

R_1 - R_6 , independently of one another, are selected from the group consisting of H, $\text{---}(\text{CH}_2)_p\text{---Z}$, an alkyl, an alkenyl, an alkynyl, an aryl, and alkyl ether, wherein any one of R_1 - R_6 are optionally substituted by one or more of an alcohol, an aminoalcohol, an amine, an amide, an ether, a polyether, a polyamide, an ester, a mercaptan, a urea, a thiourea, a guanidyl, or a carbamoyl group, and at least two of R_1 , R_3 , R_4 and R_6 are a straight chain or branched, cyclic, alkenyl, alkynyl or aryl group having from about 6 to about 64 carbon atoms attached to each N; provided that

- 1) when L is alkylene and R_1 and R_4 both are alkenyl of about 6 to about 64 carbon atoms, then at least R_2 and R_5 or R_3 and R_6 are independently selected from the group consisting of $\text{---}(\text{CH}_2)_b\text{---NH}_2$; $\text{---}(\text{CH}_2)_c\text{---NH}_2$; $\text{---CH}_2\text{CH}(\text{OR}_7)\text{CH}_2\text{NH}_2$; $\text{---CH}_2\text{CH}(\text{OR}_8)\text{CH}_2\text{NH}_2$; $\text{---}(\text{CH}_2)_b\text{NHC(O)Z}$; $\text{---}(\text{CH}_2)_c\text{NHC(O)Z}$; $\text{---CH}_2\text{CH}(\text{OR}_7)\text{CH}_2\text{NHC(O)Z}$; $\text{---CH}_2\text{CH}(\text{OR}_8)\text{CH}_2\text{NHC(O)Z}$; $\text{---L}_1\text{---NHC(NH)NH}_2$;



2) when q is 1, $R_1 - R_6$ are other than H;

L_1 and L_2 , independently from one another, are an alkylene or an alkylene ether;

R_7 and R_8 are independently H or a carbohydrate;

Z is selected from the group consisting of amine, spermyl, carboxyspermyl, guanidyl, spermidinyl, putricinyl, diaminoalkyl, pyridyl, piperidinyl, pyrrolidinyl, polyamine, amino acid, peptide, and protein;

A₁ and A₂, independently of one another, are selected from the group consisting of CH₂O, CH₂S, CH₂NH, C(O), C(NH), C(S) and (CH₂)_i;

X is a physiologically acceptable anion;

b and c are integers independently selected from 1 to about 4;

m, n, v and w are 0 or 1;

i, j, k, l, p and t are integers from 1 to about 100;

q is an integer from 1 to about 1000; and

a is the number of positive charge divided by the valence of the anion, wherein when

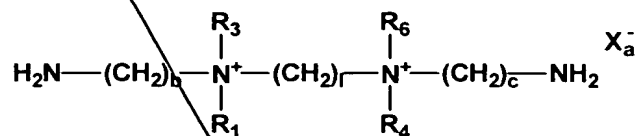
m and n are 0, then a is 0.

Please substitute the following claim 6 for the pending claim 6:

6. (Once amended) The compound as claimed in claim 5, wherein at least two of R₁, R₃, R₄ and R₆ are a straight chain or branched, cyclic, alkenyl, alkynyl or aryl having from about 8 to about 24 carbon atoms.

Please substitute the following claim 9 for the pending claim 9:

9. (Once amended) The compound as claimed in claim 5, wherein said compound has the formula:



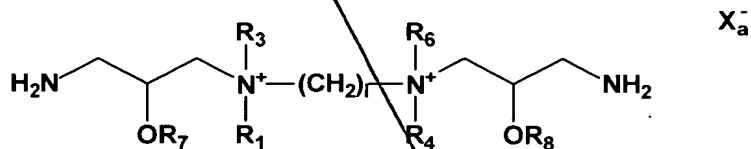
wherein

R_1 , R_3 , R_4 and R_6 , independently of one another, are selected from the group consisting of a C_1 - C_8 alkyl, alkenyl, aryl, and alkyl optionally substituted by one or more of an alcohol, an amine, an amide, an ether, a polyether, a polyamide, an ester, a mercaptan, a urea, a thiourea, a guanidyl, or a carbamoyl group, and at least two of R_1 , R_3 , R_4 and R_6 are a straight chain or branched, cyclic, alkenyl, alkynyl or aryl group having from about 8 to about 24 carbon atoms attached to each N; and

l , b and c are integers independently selected from 1 to about 4.

Please substitute the following claim 12 for the pending claim 12:

12. (Once amended) The compound as claimed in claim 5, wherein said compound has the formula:



wherein

R_1 , R_3 , R_4 and R_6 , independently of one another, are selected from the group consisting of a C_1 - C_8 alkyl, alkenyl, alkynyl, aryl, and alkyl optionally substituted by one or more of an alcohol, an amine, an amide, an ether, a polyether, a polyamide, an ester, a mercaptan, a urea, a thiourea, a guanidyl, or a carbamoyl group, and at least two of R_1 , R_3 ,

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R_4 and R_6 are a straight chain or branched, cyclic, alkenyl, alkynyl or aryl group having from about 8 to about 24 carbon atoms attached to each N;

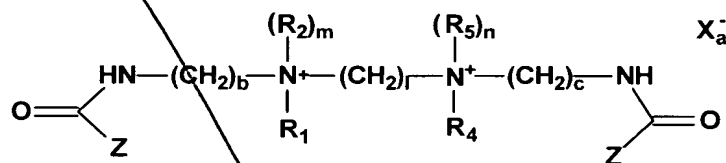
R_7 and R_8 are independently H or a carbohydrate; and

l is an integer from 1 to about 4.

Please substitute the following claim 16 for the pending claim 16:

16. (Once amended) The compound as claimed in claim 5, wherein said compound

has the formula:



wherein

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R_1 , R_2 , R_4 and R_5 , independently of one another, are selected from the group consisting of a C_1 - C_8 alkyl, alkenyl, alkynyl, aryl, and alkyl optionally substituted by one or more of an alcohol, an amine, an amide, an ether, a polyether, a polyamide, an ester, a mercaptan, a urea, a thiourea, a guanidyl, or a carbamoyl group, and at least two of R_1 , R_2 , R_4 and R_5 are a straight chain or branched, cyclic, alkenyl, alkynyl or aryl group having from about 8 to about 24 carbon atoms attached to each N;

Z is selected from the group consisting of spermiyl, spermidyl, amino acid, peptidyl, diaminoalkyl, and polyamine;

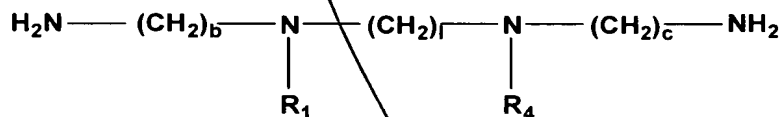
m and n are 0 or 1; and

l , b and c are integers independently selected from 1 to about 4.

Please substitute the following claim 29 for the pending claim 29:

29. (Once amended) The compound as claimed in claim 5, wherein said compound

has the formula:



wherein

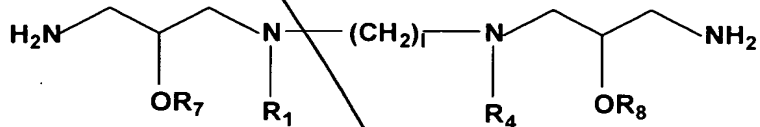
each of R₁ and R₄ is a straight chain or branched, cyclic, alkenyl, alkynyl or aryl group having from about 8 to about 24 carbon atoms; and

l, b and c are integers independently selected from 1 to about 4.

Please substitute the following claim 32 for the pending claim 32:

32. (Once amended) The compound as claimed in claim 5, wherein said compound

has the formula:

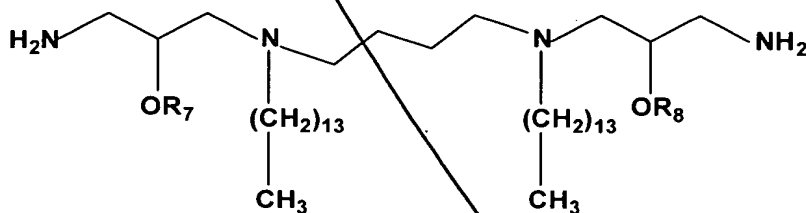


wherein

each of R_1 and R_4 is a straight chain or branched, cyclic, alkenyl, alkynyl or aryl group having from about 8 to about 24 carbon atoms; R_7 and R_8 are independently hydrogen or a carbohydrate; and
 l is an integer from 1 to about 4.

Please substitute the following claim 37 for the pending claim 37:

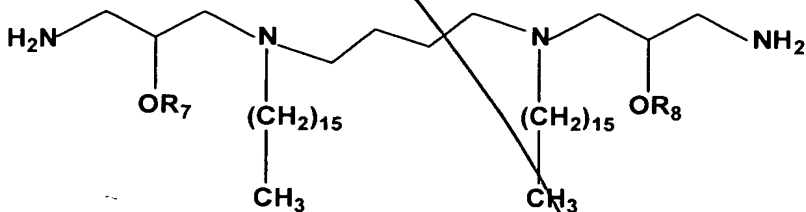
37. (Once amended) The compound as claimed in claim 1, which is:



wherein R_7 and R_8 independently are H or a carbohydrate.

Please substitute the following claim 39 for the pending claim 39:

39. (Once amended) The compound as claimed in claim 1, which is:

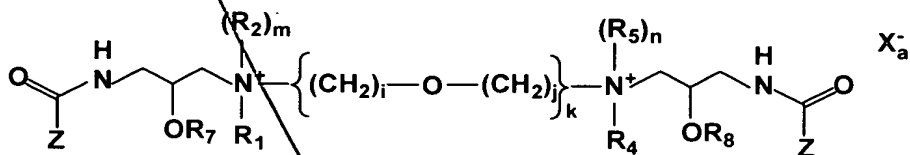


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wherein R_7 and R_8 are H or a carbohydrate.

Please substitute the following claim 41 for the pending claim 41:

41. (Once amended) The compound as claimed in claim 1, wherein said compound has the formula:



wherein

at least one of R_1 and R_4 is a straight chain or branched, cyclic, alkyl, alkenyl, alkynyl or aryl group having from about 8 to about 24 carbon atoms;

R_2 and R_5 , independently of one another, are selected from the group consisting of H and a C_1 - C_8 alkyl, alkenyl, aryl, and alkyl optionally substituted by one or more of an alcohol, an amine, an amide, an ether, a polyether, a polyamide, an ester, a mercaptan, a urea, a thiourea, a guanidyl, or a carbamoyl group;

R_7 and R_8 are independently H or a carbohydrate;

m and n are 0 or 1;

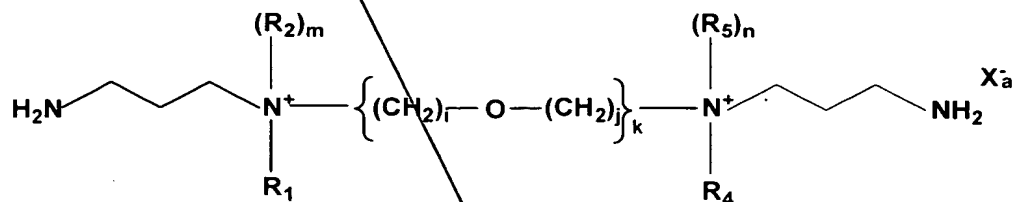
i and j are integers from about 2 to about 3; and

k is an integer from 1 to about 3.

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Please substitute the following claim 42 for the pending claim 42:

42. (Once amended) The compound as claimed in claim 5, wherein said compound has the formula:



wherein

each of R_1 and R_4 is a straight chain or branched, cyclic, alkenyl, alkynyl or aryl group having from about 8 to about 24 carbon atoms;

R_2 and R_5 , independently of one another, are selected from the group consisting of a C_1 - C_8 alkyl, alkenyl, aryl, and alkyl optionally substituted by one or more of an alcohol, an amine, an amide, an ether, a polyether, a polyamide, an ester, a mercaptan, a urea, a thiourea, a guanidyl, or a carbamoyl group;

m and n are 0 or 1;

i and j are integers from about 2 to about 3; and

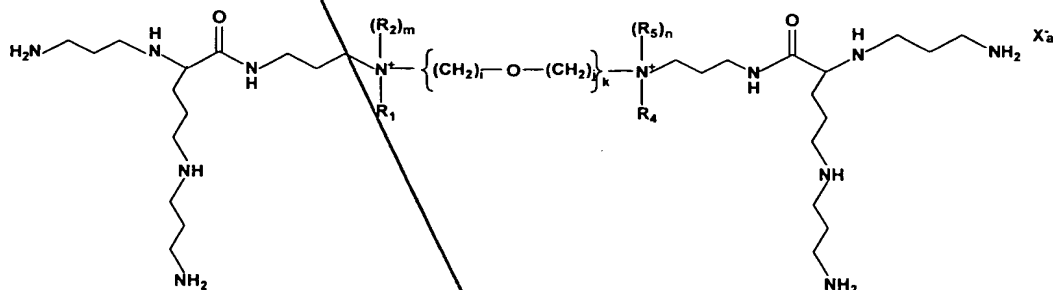
k is an integer from 1 to about 3.

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Please substitute the following claim 46 for the pending claim 46:

46. (Once amended) The compound as claimed in claim 5, wherein said compound

has the formula:



wherein

each of R₁ and R₄ is a straight chain or branched, cyclic, alkenyl, alkynyl or aryl group having from about 8 to about 24 carbon atoms;

R₂ and R₅, independently of one another, are selected from the group consisting of a C₁-C₈ alkyl, alkenyl, aryl, and alkyl optionally substituted by one or more of an alcohol, an amine, an amide, an ether, a polyether, a polyamide, an ester, a mercaptan, a urea, a thiourea, a guanidyl, or a carbamoyl group;

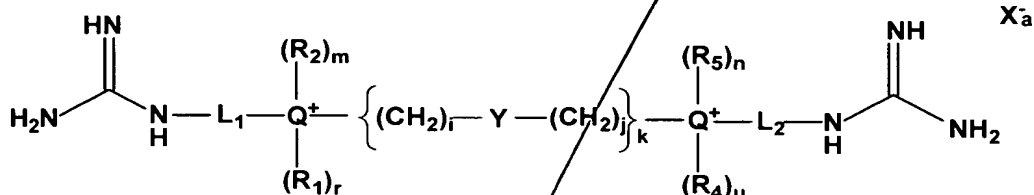
m and n are 0 or 1;

i and j are integers from about 2 to about 3; and

k is an integer from 1 to about 3.

Please substitute the following claim 48 for the pending claim 48:

48. (Once amended) A compound having the formula:



wherein

Q is selected from the group consisting of N, O, and S;

R₁ and R₄, independently of one another, are selected from the group consisting of H, -(CH₂)_p-D-Z, an alkyl, an alkenyl, an alkynyl, an aryl, and alkyl ether optionally substituted by one or more of an alcohol, an aminoalcohol, an amine, an amide, an ether, a polyether, a polyamide, an ester, a mercaptan, an alkylthio, a urea, a thiourea, a guanidyl, or a carbamoyl group, and wherein at least one of R₁ and R₄ is a straight chain or branched, cyclic, alkenyl, alkynyl or aryl group having from about 6 to about 64 carbon atoms;

D is Q or a bond;

p is an integer from 0 to about 100;

Z is selected from the group consisting of amine, spermyl, carboxyspermyl, guanidyl, spermidinyl, putricinyl, diaminoalkyl, pyridyl, piperidinyl, pyrrolidinyl, polyamine, amino acid, peptide, and protein;

m, n, r, and u are 0 or 1;

R₂ and R₅, independently of one another, are selected from the group consisting of H and a C₁ - C₈ alkyl, alkenyl, aryl, and alkyl optionally substituted by one or more of an

alcohol, an amine, an amide, an ether, a polyether, a polyamide, an ester, a mercaptan, a urea, a thiourea, a guanidyl, or a carbamoyl group;

i and j are integers from about 2 to about 3;

k is an integer from 1 to about 3;

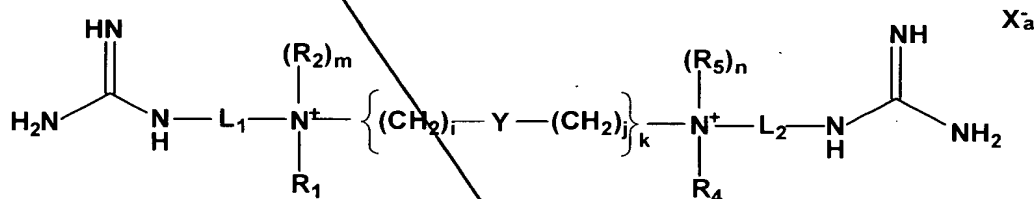
L₁ and L₂, independently from one another, are an alkylene or an alkylene ether; and

Y is selected from the group consisting of CH₂, O, S and NH.

Please substitute the following claim 49 for the pending claim 49:

49. (Once amended) The compound as claimed in claim 5, wherein said compound

has the formula:



wherein

each of R₁ and R₄ is a straight chain or branched, cyclic, alkenyl, alkynyl or aryl group having from about 8 to about 24 carbon atoms;

R₂ and R₅, independently of one another, are selected from the group consisting of a C₁ - C₈ alkyl, alkenyl, aryl, and alkyl optionally substituted by one or more of an alcohol, an amine, an amide, an ether, a polyether, a polyamide, an ester, a mercaptan, a urea, a thiourea, a guanidyl, or a carbamoyl group;

m and n are 0 or 1;

i and j are integers from about 2 to about 3;

k is an integer from 1 to about 3;

L₁ and L₂, independently from one another, are an alkylene or an alkylene ether; and

Y is selected from the group consisting of CH₂, O, S and NH.

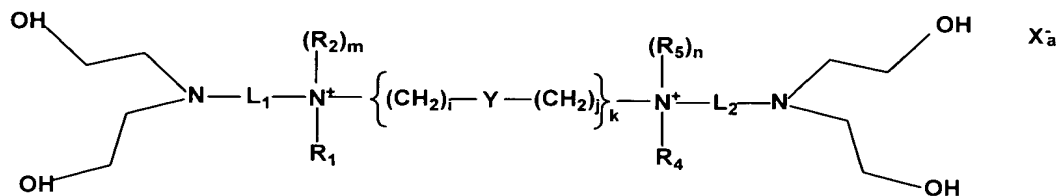
B16
comb

Please substitute the following claim 56 for the pending claim 56:

56. (Once amended) The compound as claimed in claim 5, wherein said compound

has the formula:

B17



wherein

each of R₁ and R₄ is a straight chain or branched, cyclic, alkenyl, alkynyl or aryl group having from about 8 to about 24 carbon atoms;

R₂ and R₅, independently of one another, are selected from the group consisting of a C₁ - C₈ alkyl, alkenyl, aryl, and alkyl optionally substituted by one or more of an alcohol, an amine, an amide, an ether, a polyether, a polyamide, an ester, a mercaptan, a urea, a thiourea, a guanidyl, or a carbamoyl group;

m and n are 0 or 1;

i and j are integers from about 2 to about 3;

k is an integer from 1 to about 3;

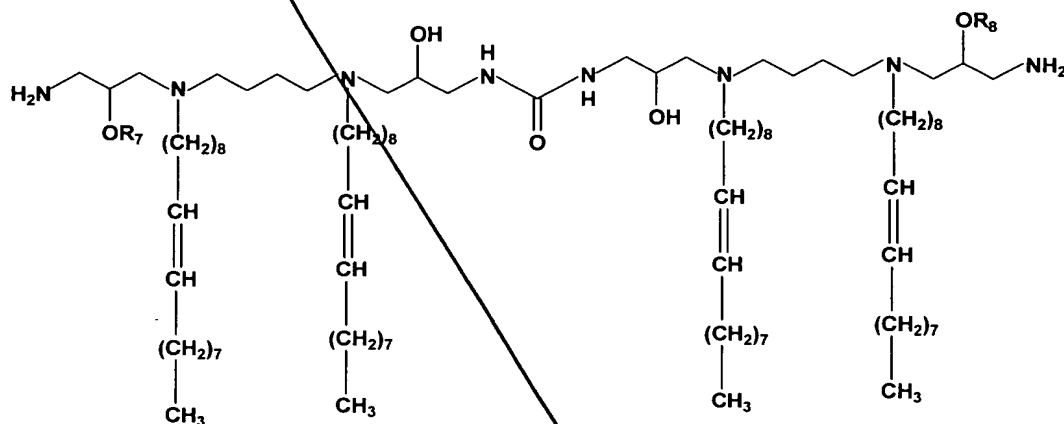
L₁ and L₂, independently from one another, are an alkylene or an alkylene ether; and

B17
SUB
D1

Y is selected from the group consisting of CH₂, O, S and NH.

Please substitute the following claim 61 for the pending claim 61:

61. (Once amended) A compound having the formula:

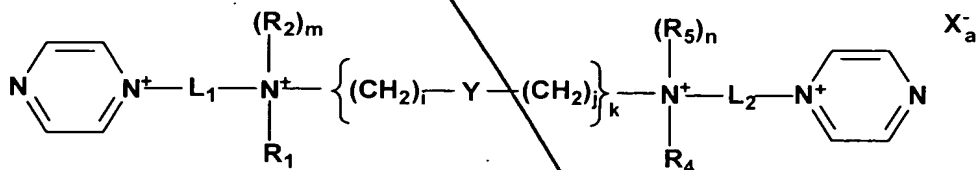


B18
SUB
D1

Please substitute the following claim 64 for the pending claim 64:

64. (Once amended) The compound as claimed in claim 5, wherein said compound

has the formula:



B19
SUB
D1

wherein

each of R_1 and R_4 is a straight chain or branched, cyclic, alkenyl, alkynyl or aryl group having from about 8 to about 24 carbon atoms;

R_2 and R_3 , independently of one another, are selected from the group consisting of a $C_1 - C_8$ alkyl, alkenyl, aryl, and alkyl optionally substituted by one or more of an alcohol, an amine, an amide, an ether, a polyether, a polyamide, an ester, a mercaptan, a urea, a thiourea, a guanidyl, or a carbamoyl group;

m and n are 0 or 1;

i and j are integers from about 2 to about 3;

k is an integer from 1 to about 3;

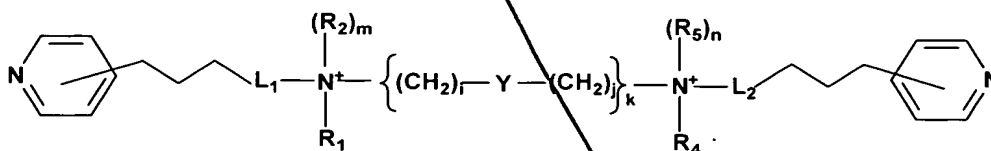
L_1 and L_2 , independently from one another, are an alkylene or an alkylene ether; and

Y is selected from the group consisting of CH_2 , O, S and NH.

Please substitute the following claim 71 for the pending claim 71:

71. (Once amended) The compound as claimed in claim 5, wherein said compound

has the formula:



Y is selected from the group consisting of CH₂, O, S and NH.

$$\text{Xa} \quad \text{N} \text{---} \text{CH}_2\text{CH}_2\text{CH}_2\text{---} \text{L}_1\text{---} \text{N}^+ \begin{matrix} \text{(R}_2\text{)}_m \\ \text{R}_1 \end{matrix} \text{---} \left\{ \text{(CH}_2\text{)}_i\text{---} \text{Y---} \text{(CH}_2\text{)}_j \right\}_k \text{---} \text{N}^+ \begin{matrix} \text{(R}_5\text{)}_n \\ \text{R}_4 \end{matrix} \text{---} \text{L}_2\text{---} \text{CH}_2\text{CH}_2\text{CH}_2\text{---} \text{N}$$

wherein

each of R_1 and R_4 is a straight chain or branched, cyclic, alkenyl, alkynyl or aryl group having from about 8 to about 24 carbon atoms;

R_2 and R_3 , independently of one another, are selected from the group consisting of a $C_1 - C_8$ alkyl, alkenyl, aryl, and alkyl optionally substituted by one or more of an alcohol, an amine, an amide, an ether, a polyether, a polyamide, an ester, a mercaptan, a urea, a thiourea, a guanidyl, or a carbamoyl group;

m and n are 0 or 1;

i and j are integers from about 2 to about 3;

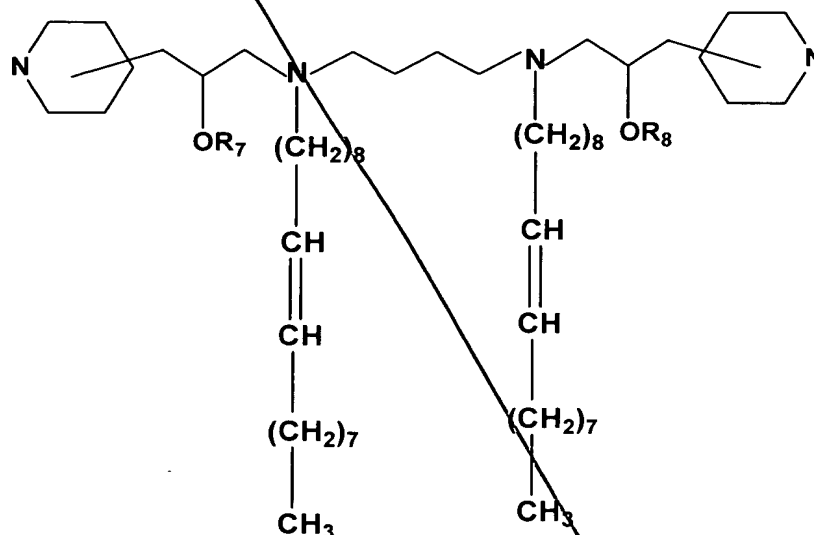
k is an integer from 1 to about 3;

L_1 and L_2 , independently from one another, are an alkylene or an alkylene ether; and

Y is selected from the group consisting of CH_2 , O, S and NH.

Please substitute the following claim 80 for the pending claim 80:

80. (Once amended) The compound as claimed in claim 5, which is:

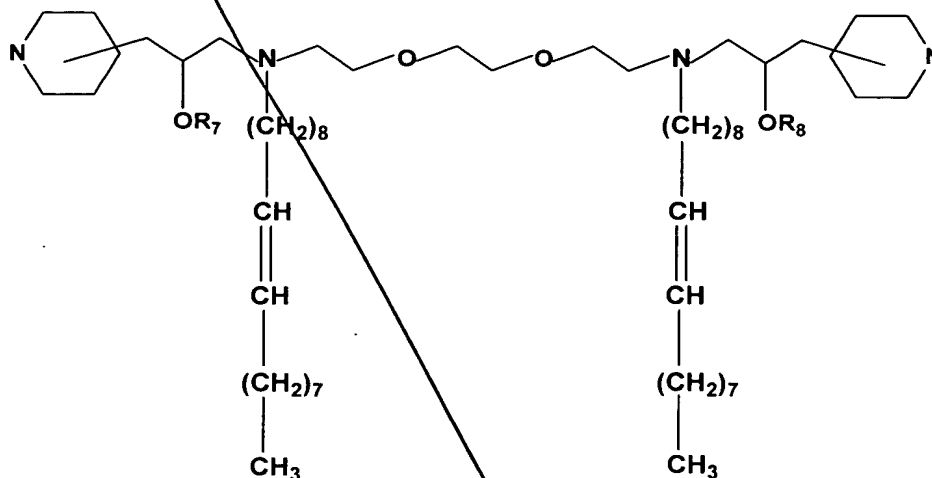


B23
CMA
SUB
D

wherein R₇ and R₈ are independently H or a carbohydrate.

Please substitute the following claim 82 for the pending claim 82:

82. (Twice amended) The compound as claimed in claim 5, which is:

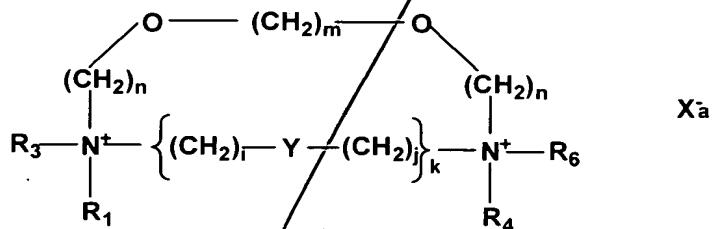


wherein R₇ and R₈ are independently H or a carbohydrate.

Please substitute the following claim 85 for the pending claim 85:

85. (Once amended) A compound having the formula:

CH
B24



Y is selected from the group consisting of CH₂, an ether, a polyether, an amide, a polyamide, an ester, a sulfide, a urea, a thiourea, a guanidyl, a carbamoyl, a carbonate, a phosphate, a sulfate, a sulfoxide, an imine, a carbonyl, and a secondary amino group and wherein Y is optionally substituted by -X₁-L'-X₂-Z or -Z;

FB 24
cont
CH
new

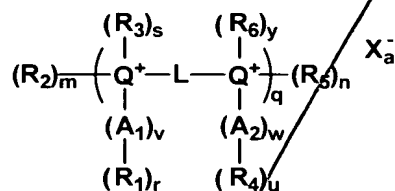
X₁ and X₂, independently of one another, are selected from the group consisting of NH, O, S, alkylene, and arylene;

D is Q or a bond;

i, j, k, l and p are integers from 1 to about 10.

Please substitute the following claim 93 for the pending claim 93:

93. (Once amended) A compound having the formula:

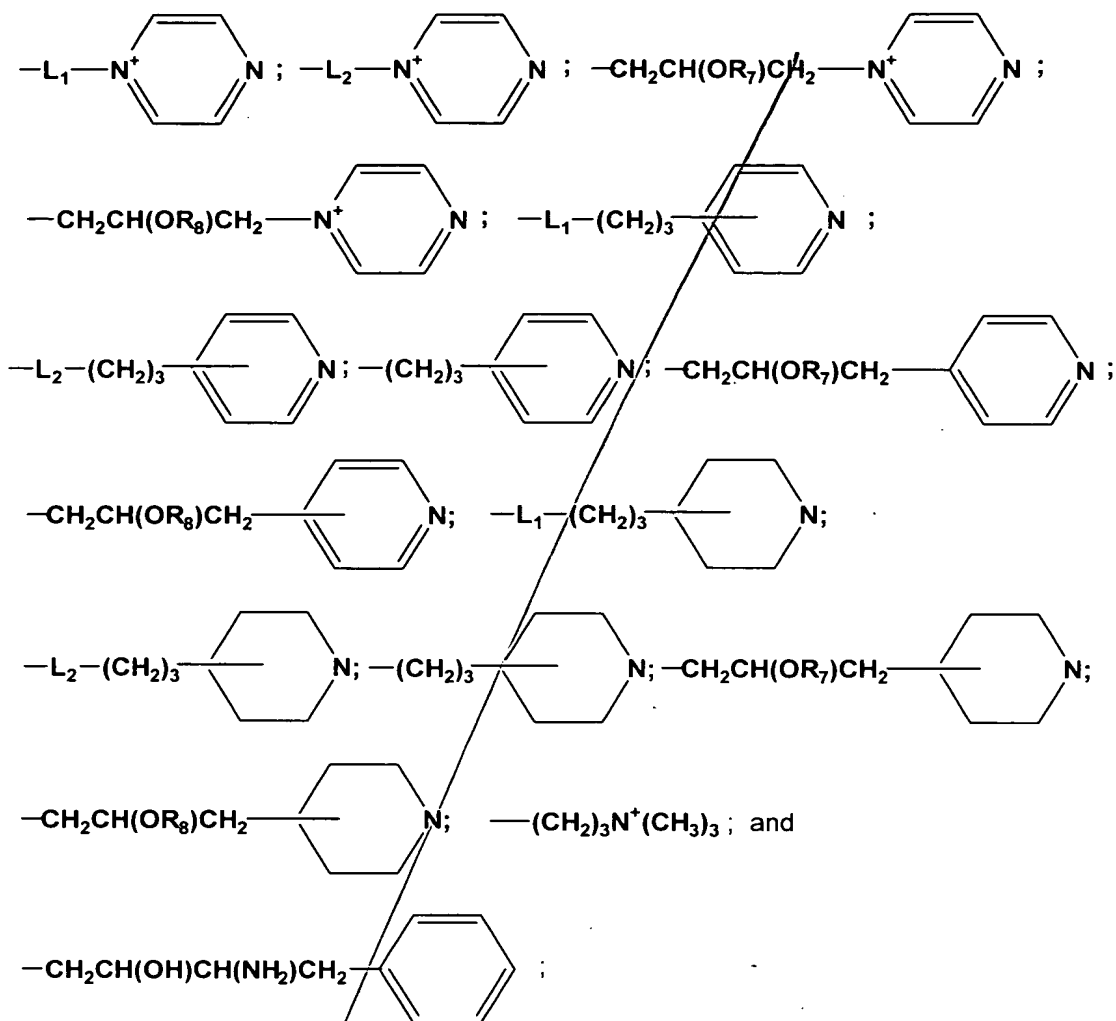


wherein

Q is selected from the group consisting of N, O and S;

L is a bivalent organic radical capable of covalently linking each Q;

R₁ - R₆, independently of one another, are selected from the group consisting of H, -(CH₂)_p-D-Z, an alkyl, an alkenyl, an alkynyl, an aryl, and alkyl ether, wherein any one of R₁-R₆ are optionally substituted by one or more of an alcohol, an aminoalcohol, an amine, an amide, an ether, a polyether, a polyamide, an ester, a mercaptan, an alkylthio, a urea, a thiourea, a guanidyl, or a carbamoyl group, and wherein at least one of R₁, R₃, R₄ and R₆ is a straight chain or branched, cyclic, alkyl, alkenyl, alkynyl or aryl group having from about 6 to about 64 carbon atoms and at least one of R₂, R₃, R₅ and R₆ is selected from the group consisting of -CH₂CH(OR₇)CH₂NH₂; -CH₂CH(OR₈)CH₂NH₂; -(CH₂)_bNHC(O)Z; -(CH₂)_cNHC(O)Z; -CH₂CH(OR₇)CH₂NHC(O)Z; -CH₂CH(OR₈)CH₂NHC(O)Z; -CH₂CH(OR₇)CH₂NHC(NH)NH₂; -CH₂CH(OR₈)CH₂NHC(NH)NH₂; -L₁-N(CH₂CH₂OH)₂; -L₂-N(CH₂CH₂OH)₂; -(CH₂)₄N[-(CH₂)₈-CH=CH-(CH₂)₇-CH₃]-CH₂-CH(OR₇)CH₂NH₂; -(CH₂)₄N[-(CH₂)₈-CH=CH-(CH₂)₇-CH₃]-CH₂-CH(OR₈)CH₂NH₂;



and R_1 and R_4 or R_3 and R_6 may optionally be covalently linked with each other, or with L to form a cyclic moiety;

Z is selected from the group consisting of amine, spermyl, carboxyspermyl, guanidyl, spermidinyl, putricinyl, diaminoalkyl, pyridyl, piperidinyl, pyrrolidinyl, polyamine, amino acid, peptide, and protein;

D is Q or a bond;

B25
cont

Ch

A₁ and A₂, independently of one another, are selected from the group consisting of CH₂O, CH₂S, CH₂NH, C(O), C(NH), C(S) and (CH₂)_i;

X is a physiologically acceptable anion;

L₁ and L₂, independently from one another, are an alkylene or an alkylene ether;

R₇ and R₈, independently from one another, are an alkylene or an alkylene ether;

b and c are integers independently selected from 1 to about 4;

m, n, r, s, u, v, w and y are 0 or 1, with the proviso that when both m and n are 0 at least one of r, s, u and y is other than 0;

p and t are integers from 0 to about 100;

q is an integer from 1 to about 1000; and

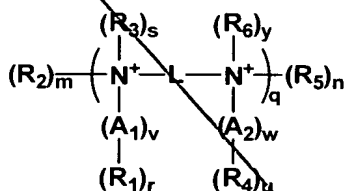
a is the number of positive charge divided by the valence of the anion.

Please substitute the following claim 94 for the pending claim 94:

94. (Twice amended) The compound as claimed in any one of claims 1, 5, 48, 85, 89, 93, and 110 wherein said cyclic group is a cholesteryl group.

Please substitute the following claim 95 for the pending claim 95:

95. (Once amended) A compound or a polycation having the formula:



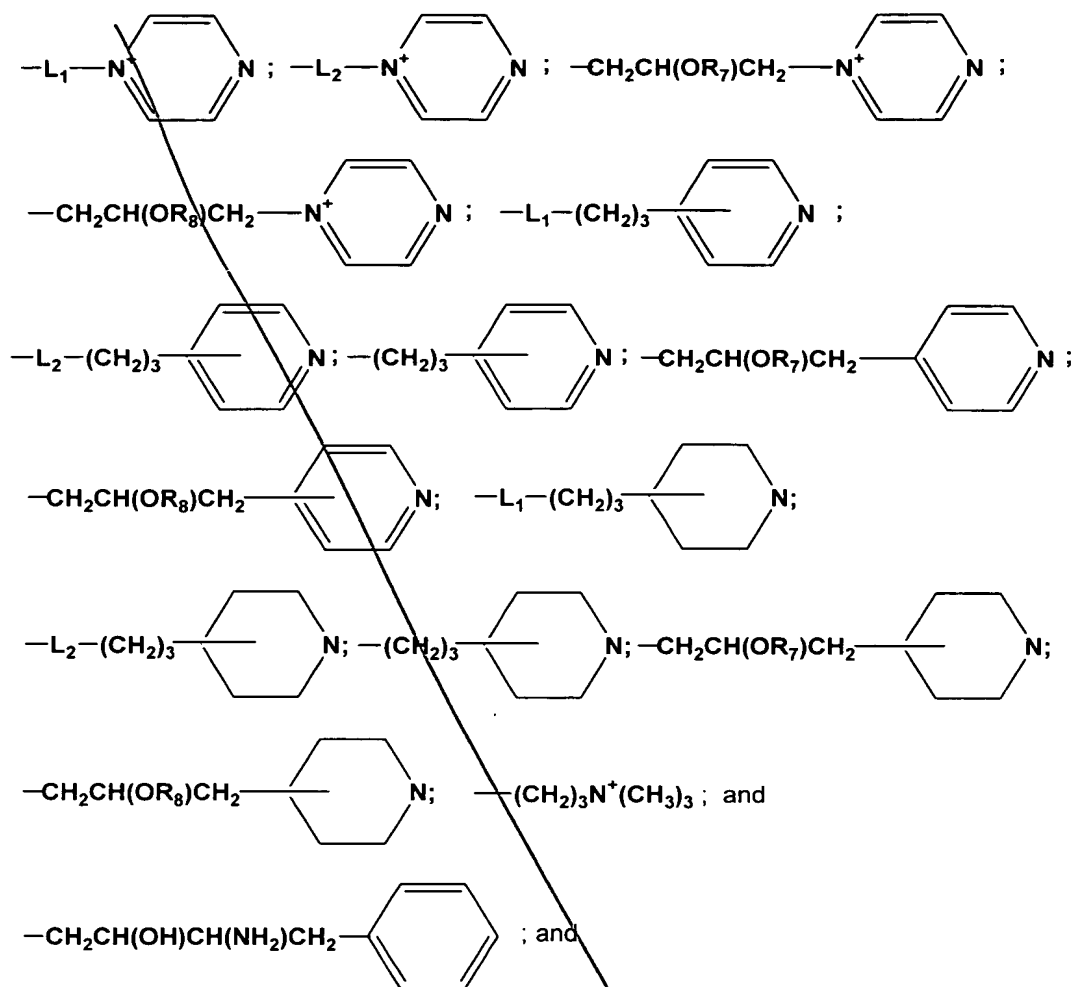
wherein

L is C, CH, $(CH_2)_i$, or $\{(CH_2)_i - Y - (CH_2)_j\}_k$, wherein Y is selected from the group consisting of CH_2 , an ether, a polyether, an amide, a polyamide, an ester, a sulfide, a urea, a thiourea, a guanidyl, a carbamoyl, a carbonate, a phosphate, a sulfate, a sulfoxide, an imine, a carbonyl, and a secondary amino group and wherein Y is optionally substituted by $-X_1-L'-X_2-Z$ or $-Z$;

$R_1 - R_6$, independently of one another, are selected from the group consisting of H, $-(CH_2)_p-Z$, an alkyl, an alkenyl, an alkynyl, an aryl, and alkyl ether, wherein any one of R_1-R_6 are optionally substituted by one or more of an alcohol, an aminoalcohol, an amine, an amide, an ether, a polyether, a polyamide, an ester, a mercaptan, a urea, a thiourea, a guanidyl, or a carbamoyl group, and at least two of R_1, R_3, R_4 and R_6 are a straight chain or branched, cyclic, alkenyl, alkynyl or aryl group having from about 6 to about 64 carbon atoms attached to each N; provided that

- 1) when L is alkylene and R_1 and R_4 both are alkenyl of about 6 to about 64 carbon atoms, then at least R_2 and R_5 or R_3 and R_6 are independently selected from the group consisting of $-(CH_2)_b-NH_2$; $-(CH_2)_c-NH_2$; $-CH_2CH(OR_7)CH_2NH_2$; $-CH_2CH(OR_8)CH_2NH_2$; $-(CH_2)_bNHC(O)Z$; $-(CH_2)_cNHC(O)Z$; $-CH_2CH(OR_7)CH_2NHC(O)Z$; $-CH_2CH(OR_8)CH_2NHC(O)Z$; $-L_1-NHC(NH)NH_2$; $-L_2-NHC(NH)NH_2$; $-CH_2CH(OR_7)CH_2NHC(NH)NH_2$; $-CH_2CH(OR_8)CH_2NHC(NH)NH_2$; $-L_1-N(CH_2CH_2OH)_2$; $-L_2-N(CH_2CH_2OH)_2$; $-(CH_2)_4N[-(CH_2)_8-CH=CH-(CH_2)_7-CH_3]-CH_2-CH(OR_7)CH_2NH_2$; $-(CH_2)_4N[-(CH_2)_8-CH=CH-(CH_2)_7-CH_3]-CH_2-CH(OR_8)CH_2NH_2$;

B27
cont
Sub
1



2) when q is 1, R₁ - R₆ are other than H;

L₁ and L₂, independently from one another, are an alkylene or an alkylene ether;

R₇ and R₈ are independently H or a carbohydrate;

Z is selected from the group consisting of amine, spermyl, carboxyspermyl, guanidyl, spermidinyl, putricinyl, diaminoalkyl, pyridyl, piperidinyl, pyrrolidinyl, polyamine, amino acid, amino acid derivative, peptide, and protein;

X_1 and X_2 , independently of one another, are selected from the group consisting of NH, O, S, alkylene and arylene;

L' is selected from the group consisting of alkylene, alkenylene, alkynylene, arylene, alkylene ether, and polyether;

A_1 and A_2 , independently of one another, are selected from the group consisting of CH_2O , CH_2S , CH_2NH , $C(O)$, $C(NH)$, $C(S)$ and $(CH_2)_i$;

b and c are integers independently selected from 1 to about 4;

m , n , r , s , u , v , w and y are 0 or 1, with the proviso that when both m and n are 0 at least one of r , s , u and y is other than 0;

i , j , k , l , p and t are integers from 0 to about 100; and

q is an integer from 1 to about 1000.

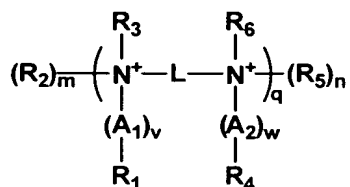
Please substitute the following claim 96 for the pending claim 96:

96. (Once amended) The compound or the polycation as claimed in claim 95, wherein at least two of R_1 , R_3 , R_4 and R_6 is a straight chain or branched, cyclic, alkenyl, alkynyl or aryl group having from about 8 to about 24 carbon atoms.

Please substitute the following claim 97 for the pending claim 97:

97. (Once amended) A compound or a polycation having the formula:

bac
not defined



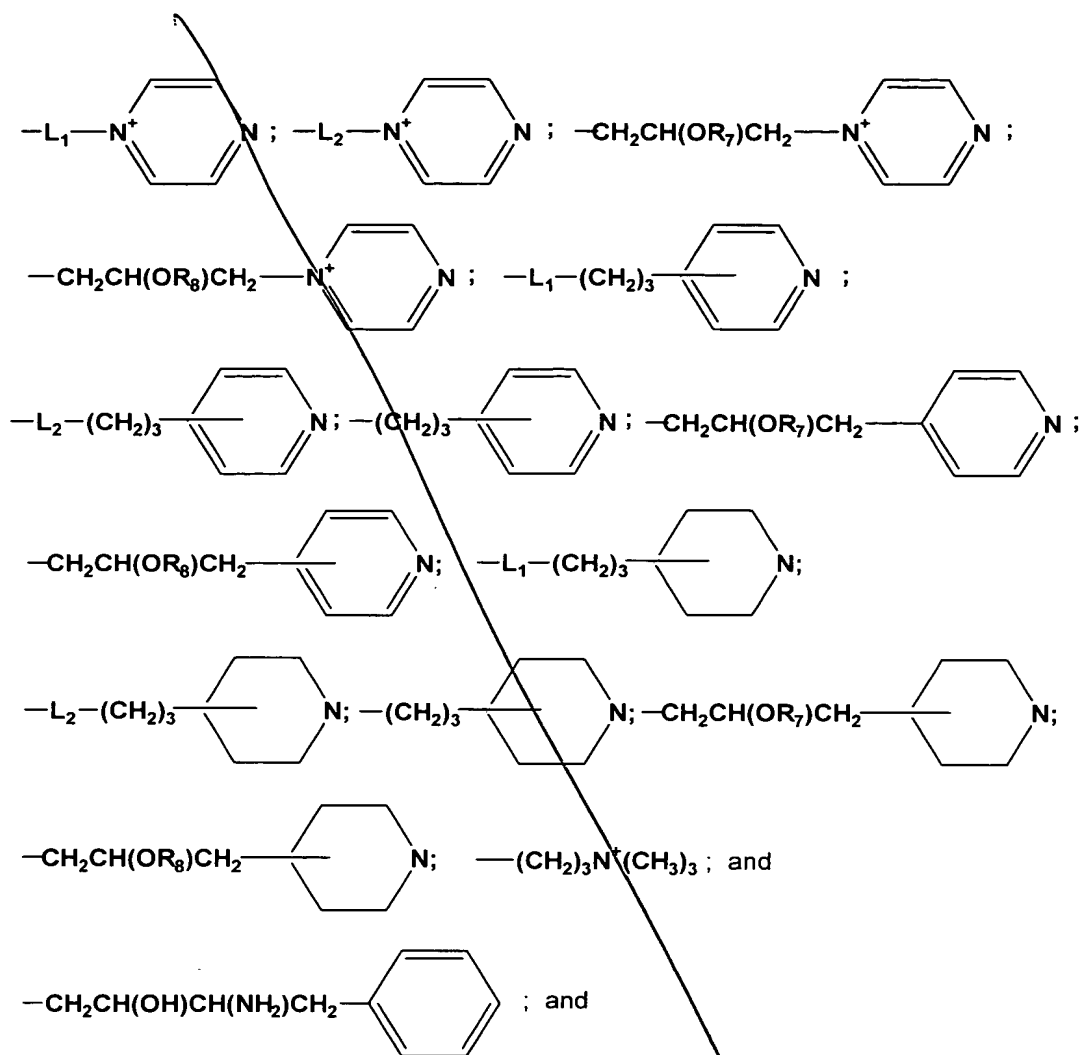
wherein

L is $(CH_2)_l$ or $\{(CH_2)_i - Y - (CH_2)_j\}_k$, wherein Y is selected from the group consisting of CH_2 , an ether, a polyether, an amide, a polyamide, an ester, a sulfide, a urea, a thiourea, a guanidyl, a carbamoyl, a carbonate, and a secondary amino group;

$R_1 - R_6$, independently of one another, are selected from the group consisting of H, $-(CH_2)_p-Z$, an alkyl, an alkenyl, an alkynyl, an aryl, and an alkyl ether, wherein any one of R_1-R_6 are optionally substituted by one or more of an alcohol, an aminoalcohol, an amine, an amide, an ether, a polyether, a polyamide, an ester, a mercaptan, a urea, a thiourea, a guanidyl, or a carbamoyl group, and at least two of R_1, R_3, R_4 and R_6 are a straight chain or branched, cyclic, alkyl, alkenyl, alkynyl or aryl group having from about 6 to about 64 carbon atoms attached to each N; provided that

- 1) when L is alkylene and R_1 and R_4 both are alkenyl of about 6 to about 64 carbon atoms, then at least R_2 and R_5 or R_3 and R_6 are independently selected from the group consisting of $-(CH_2)_b-NH_2$; $-(CH_2)_c-NH_2$; $-CH_2CH(OR_7)CH_2NH_2$; $-CH_2CH(OR_8)CH_2NH_2$; $-(CH_2)_bNHC(O)Z$; $-(CH_2)_cNHC(O)Z$; $-CH_2CH(OR_7)CH_2NHC(O)Z$; $-CH_2CH(OR_8)CH_2NHC(O)Z$; $-L_1-NHC(NH)NH_2$; $-L_2-NHC(NH)NH_2$; $-CH_2CH(OR_7)CH_2NHC(NH)NH_2$; $-CH_2CH(OR_8)CH_2NHC(NH)NH_2$; $-L_1-N(CH_2CH_2OH)_2$; $-L_2-N(CH_2CH_2OH)_2$; $-(CH_2)_4N[-(CH_2)_8-CH=CH-(CH_2)_7-CH_3]-CH_2-CH(OR_7)CH_2NH_2$; $-(CH_2)_4N[-(CH_2)_8-CH=CH-(CH_2)_7-CH_3]-CH_2-CH(OR_8)CH_2NH_2$;

AB28
Cmt
SUB
D



2) when q is 1, $R_1 - R_6$ are other than H;

L_1 and L_2 , independently from one another, are an alkylene or an alkylene ether;

R_7 and R_8 are independently H or a carbohydrate;

B28
Cmt
SUB
DI

Z is selected from the group consisting of amine, spermyl, carboxyspermyl, guanidyl, spermidinyl, putricinyl, diaminoalkyl, pyridyl, piperidinyl, pyrrolidinyl, polyamine, amino acid, amino acid derivative, peptide, and protein;

A₁ and A₂, independently of one another, are selected from the group consisting of CH₂O, CH₂S, CH₂NH, C(O), C(NH), C(S) and (CH₂)_i;

m, n, v and w are 0 or 1;

i, j, k, l, p and t are integers from 1 to about 100; and

q is an integer from 1 to about 1000.

Please substitute the following claim 101 for the pending claim 101:

101. (Twice amended) A composition comprising one or more compounds of any one of claims 1, 37, 38, 48, 61, 85, 93, 95, 97, and 110.

C6
B29

Please substitute the following claim 102 for the pending claim 102:

102. (Twice amended) A composition comprising one or more compounds of any one of claims 1, 37, 38, 48, 61, 85, 93, 95, 97, and 110 and at least one additional component selected from the group consisting of a cell, cells, a cell culture, a cell culture media, a neutral lipid, a nucleic acid, and a transfection enhancer.

Please substitute the following claim 104 for the pending claim 104:

B30
SUB
DI

104. (Twice amended) A lipid aggregate comprising one or more compounds of any one of claims 1, 37, 38, 48, 61, 85, 93, 95, 97, and 110.

Please substitute the following claim 107 for the pending claim 107:

B31
C8

107. (Twice amended) A kit comprising one or more compounds of any one of claims 1, 37, 38, 48, 61, 85, 93, 95, 97, and 110 and at least one additional component selected from the group consisting of a cell, cells, a cell culture media, a nucleic acid, a transfection enhancer and instructions for transfecting a cell or cells.

Please substitute the following claim 108 for the pending claim 108:

108. (Twice amended) A method for introducing a polyanion into a cell or cells, said method comprising forming a liposome from a positively charged compound of any one or claims 1, 37, 38, 48, 61, 85, 93, 95, 97, and 110, contacting the liposome with a polyanion to form a positively-charged polyanion-liposome complex and incubating the complex with a cell or cells.

Please substitute the following claim 109 for the pending claim 109:

109. (Twice amended) A method for introducing a biologically active substance into a cell, said method comprising forming a liposome of a compound of any one of claims 1, 37, 38, 48, 61, 85, 93, 95, 97, and 110 and a biologically active substance and incubating the liposome with a cell or cell culture.